

### **REMARKS**

Claims 1-16 are currently pending in the application; with claims 1 and 13 being independent. Claims 1 and 13 have been amended to better define the present invention. Claim 4 has been amended to address a minor informality. Applicants respectfully request entry of this amendment and earnestly seek timely allowance of the pending claims.

### ***Information Disclosure Statement***

Applicants submitted an Information Disclosure Statement on April 29, 2005, which was not received with the outstanding Office Action. Applicants respectfully request the Examiner consider the references submitted on the form PTO-1449 and indicate said consideration with the appropriate markings. For the Examiner's convenience, a copy of the Information Disclosure Statement is included with this reply.

### ***Omitted Claims***

Applicants note that the Office Action failed to provide art rejections for claims 12, and 14-16. Applicants note that these claims were addressed in §112, first paragraph, rejection; however, an art-based rejection should also have been provided, if appropriate, or the Office Action should have indicated that the claims are allowed. In absence of any such indication, Applicants will assume that claims 12, and 14-16 are allowed, and if this is not the case, Applicants respectfully request the Examiner provide another Office Action explicitly indicating the disposition of these claims so that Applicants may adequately respond to the Examiner.

### ***Claim Objections***

The Examiner objected to claims 5 and 6 under 37 CFR 1.75(c) as being improper multiple dependent claims. Applicants submit that claim 5, as amended in the Office Action submitted April 29, 2005, depends from any one of claims 1-3; claim 6 depends directly from claim 5. Claim 5 is a multiple dependent claim which does not depend from other multiple dependent claims. Claim 6 is not a multiple dependent claim as is only depends from claim 5.

Applicants therefore submit that claims 5 and 6 are in proper form and respectfully request the Examiner to withdraw the objections to these claims.

### ***Claim Rejections – 35 USC §112***

The outstanding Office Action indicated that claims 1-9 and 11-16 are rejected under 35 USC §112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner asserts that independent claim 1 and independent claim 13 recite features which are not described in the original disclosure. The Examiner asserts that “the original disclosure is silent as to the ‘channel dependent parameter’ and the ‘computing at least one parameter based upon a channel’ and as such the instant claims are non-enabling.”

Applicants respectfully traverse the §112, first paragraph, rejection and submit that one of ordinary skill in the art would appreciate that the specification is enabling. By way of example only, on page 30, lines 2-13 of the specification, would enable one of ordinary skill in the art to make and use the invention without undue experimentation.

Accordingly, Applicants respectfully request the Examiner to withdraw the §112, first paragraph, rejection of claims 1-9 and 11-16.

***Claim Rejections – 35 USC §102***

The Office Action indicated that claims 1-4, 7-9, 11, and 13 are rejected under 35 USC §102(a and/or e) as being anticipated by US Patent No. 6,363,033 to Cole et al. (“Cole”). Applicants respectfully submit the Examiner has failed to establish a *prima facie* case of anticipation and traverse this rejection.

Cole merely discloses a digital transmit beamformer system with multiple beam transmit capability which has a plurality of multi-channel transmitters, each channel with a source of sampled complex-valued initial waveform information to be applied to one or more corresponding transducer elements for each beam. (See abstract.) Specifically, Cole discloses a medical ultrasound imaging system which includes a beamformer system, one or more transducers, a display processing system with a display and an ultrasound imaging control (column 10, lines 36-41). Furthermore, Cole discloses an ultrasound system R-20 which includes a transmit multiplexer T-106 for routing output waveforms from the transmitters T-103 to the transducer elements T-114 (column 11, lines 5-9; Fig. 2a.)

However, Cole fails to disclose, at least, “wherein said transmitting beamformer generates a control signal, for each channel, for controlling pulse durations of a reference signal to generate a carrier drive signal, further wherein the control signal is based upon at least one channel dependent parameter,” as recited in claim 1 (emphasis added), and “providing at least one interface signal to generate a carrier drive signal, wherein the at least one interface signal is based upon the at least one parameter and is used to control a pulse duration modulation process,” as recited in claim 13 (emphasis added).

Accordingly, Applicants respectfully request the Examiner to withdraw the rejection of independent claims 1 and 13. Claims 2-4, 7-9, and 11 depend from claim 1 and are allowable at least by virtue of their dependency from allowable claim 1.

The Office Action indicated that claims 1-4, 7-9, 11, and 13 are rejected under 35 USC §102(b) as being anticipated by US Patent No. 6,123,671 to Miller ("Miller"). Applicants again submit the the Examiner has failed to establish a prima facie case of anticipation and traverse this rejection.


Miller merely discloses an ultrasound system where a plurality of delay calculators are distributed throughout a beamformer. Each delay calculator provides beamforming delays and apodization values for a plurality of channels/elements. (See abstract.) Specifically, Miller discloses an architecture for calculating beamformer time delays and apodization values in real time by using a cordic rotator, a simple multiplier-less device used for polar-Cartesian conversions. The use of the cordic rotator to directly calculate the root-sum-of-squares without approximation or complex logic provides cost and performance advantages. (See column 2, line 63 through column 3, line 4.)

However, Miller fails to disclose, at least, "wherein said transmitting beamformer generates a control signal, for each channel, for controlling pulse durations of a reference signal to generate a carrier drive signal, further wherein the control signal is based upon at least one channel dependent parameter," as recited in claim 1 (emphasis added), and "providing at least one interface signal to generate a carrier drive signal, wherein the at least one interface signal is based upon the at least one parameter and is used to control a pulse duration modulation process," as recited in claim 13 (emphasis added).


Application No. 10/720,226  
Amendment dated November 29, 2005  
After Final Office Action of July 29, 2005

Docket No.: 0757-0280P

Accordingly, Applicants respectfully request the Examiner to withdraw the rejection of independent claims 1 and 13. Claims 2-4, 7-9, and 11 depend from claim 1 and are allowable at least by virtue of their dependency from allowable claim 1.

  
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Respectfully submitted,

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Attachment: Copy of Form PTO-1449, dated April 29, 2005



**COPY**

Sheet 1 of 1 (4/29/05)

Form PTO-1449

**INFORMATION DISCLOSURE CITATION  
IN AN APPLICATION**

(Use several sheets if necessary)

ATTY. DOCKET NO.  
0757-0280P

APPLICATION NO.  
10/720,226

APPLICANT  
Yasushi NISHIMORI et al.

FILING DATE  
November 25, 2003

GROUP  
3662

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	Kind	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	US 5,833,614	A	1998-11-10	DODD et al.			
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						

**FOREIGN PATENT DOCUMENTS**

	Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
								YES	NO

**OTHER DOCUMENTS**

(Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)


EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.